

[Document Type]

Claims under Article 19

[1] Wavelength conversion device comprising:

- a laser light source for outputting a fundamental wave light,
- a nonlinear optical crystal into which said fundamental wave light is made to enter to generate converted light having a wavelength different from the wavelength of said fundamental wave light,
- an optical path adjusting portion for adjusting the direction of propagation of said fundamental wave light and the position of the light beam of said fundamental wave light in order to make said fundamental wave light enter said nonlinear optical crystal while satisfying phase matching conditions,
- a photodetector for detecting the intensity of said converted light,
- an adjustment value calculating means for calculating the adjustment values that respectively correspond to a plurality of adjustment means provided in said optical path adjusting portion, using fuzzy inference, from the value of the intensity of said converted light that is output from said photodetector,
- and an optical path adjusting portion control device for controlling a plurality of adjustment means provided in said optical path adjusting portion, based upon said adjustment values calculated in said adjustment value calculating means.

[2] (added) Wavelength conversion device according to claim 1, characterized in that fuzzy inference is carried out using at least the time derivative value in the intensity of said converted light that is output from said photodetector, and the amount of deviation from the target value of the intensity of said converted light that is output from said photodetector.

[3] (added) Wavelength conversion device according to claim 1, characterized in that in said optical path adjusting portion, only prisms are used as the optical elements for adjusting the optical path.

[4] (added) Wavelength conversion device according to claim 1, characterized in that when optical path adjustment is being carried out, a return to zero operation is not carried out.

[5] (added) Wavelength conversion device according to claim 4, characterized in that the initial angle of rotation of one or more motors for driving optical elements for adjusting the optical path in said optical path adjusting portion are set randomly.

[6] (added) Wavelength conversion device according to claim 4, characterized in that the driving order of a plurality of motors for driving optical elements for adjusting the optical path in said optical path adjusting portion is set randomly